Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at http://about.jstor.org/participate-jstor/individuals/early-journal-content.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

# CHILDREN'S DEPARTMENT

IN CHARGE OF

LOUISE C. BRENT

## THE FEEDING OF CHILDREN

BY JOSEPH ROBY, A.B., M.D.
Rochester, New York

So MUCH has been written of late in the medical journals on the subject of food, and especially of infant feeding, that it seems as though any further article would be superfluous, except that in this case the seed is to fall on new ground and good ground, for the nurse has an exceptional opportunity to instruct the young mother.

It is well to understand at the outset the need for the different kinds of food and what these foods are. The chief uses of food are (1) to form the materials of the body and to repair their waste; (2) to yield energy in the form of heat and power, for one cannot make something out of nothing, and the child will not grow and increase in weight without some building material, neither can it run without fuel.

All foods, no matter how different they may appear when on the table, can practically be put into five divisions,—(1) protein, (2) fats, (3) carbohydrates, (4) salts, and (5) water. Of these five, three are absolutely necessary to life, protein, salts, and water, existence being possible without the others. Protein is here used as a broad term to include all the organic compounds of nitrogen. The most important subdivision of this class is the albumins, for without this food man cannot exist. These are the building materials of the body, and are represented by the curd, or casein, of milk, the white, or albumin, of the egg, and the gluten of wheat flour.

After digestion by the gastric juice in the stomach or by the pancreatic juice in the intestine, they are taken up by the blood in another form of albumin and carried to the muscles, liver, brain, etc., to make new cells or to repair the old ones. These albumins go to make up another very important thing in the body, namely, the hæmoglobin, or red coloring matter of the blood—the oxygen-carrier, without which in normal amount a vigorous mental or physical life is impossible. As practically every part of the child's body is growing and increasing in size by the addition of new cells made of albuminous material, it is necessary that there should be a proper amount of animal food in the diet, for animal food yields the most proteid.

The fats, examples of which are the fat of meat, butter-fat in milk, olive oil, or the oil of corn and wheat, serve for fuel that is burned up as oil burns in a lamp, only more slowly, and partly are stored up as body fat.

The carbohydrates, which include all the various forms of starch and sugar, act as fuel and are also transformed into fats and stored up in the body as such. The child needs proportionately more of this kind of food than the adult, for the child's nutritive processes are more active, the heart works proportionately harder, and the muscles of a healthy child are kept in almost constant motion. In man the correct nutritive ratio is one to five or six,—that is the ratio of the albuminoids to the fuels calculated in fuel value,—while the mother furnishes her baby with a food having a nutritive ratio of one to ten or twelve.

All of the food materials contain some or all of these nutrients in different quantities, and for this reason, as well as for the fact that in some of the foods one kind of nutrient is more completely or more quickly digested than it is in another, it is impossible to say that under all conditions any one food is the best food. For example, a child with a tendency to constipation needs a food such as oatmeal or fruit, that leaves an undigested residue, that will mechanically irritate the intestine to increased activity, and one suffering from diarrhœa a food such as milk, that is completely digested and therefore leaves no undigested residue to irritate the already inflamed intestine. So that in deciding upon what is a good food for a child it is necessary to consider:

1. The quantity of the nutrients in the food.
2. The rapidity of digestion.
3. The completeness of digestion.
4. Among the poor, the cost of the food.

It is the intention in this paper to give a few general considerations of food and its nutrient value, and in a subsequent paper to give more particular ideas for feeding children between the ages of one and twelve or fifteen.

For a child, as for an adult, a great deal depends upon the cooking of the food, the method of serving it when cooked, and the state of the mind of the child at the mealtime. An attempt should always be made to have the food look attractive and clean. If the food is meant to be hot, it should be hot, and not lukewarm or cold. "Palatability and digestibility go hand in hand, and the intelligent preparation of a so-called cheap or tough piece of meat, for example, may result in as digestible and nutritive product as the more careless preparation of a piece of tenderloin."

Roasting is more economical than boiling, because in boiling part of the nutritive matter is dissolved out and thrown away with the water. Frying is also more economical than boiling, but it is very probable that the resulting product is not quite so digestible as when the meat is roasted, owing to the more intimate admixture of fat, which is not digested at all by the stomach, but it has the advantage of getting an increased amount of fuel food into a thin child, provided the child's stomach digestion is not interfered with by the presence of the fat. Vegetables and cereals should be well cooked and meats more rarely cooked as a general rule. Vegetables, such as potatoes, boiled with the skins on, retain more of the nutrients than when peeled before boiling. Potatoes and oatmeal especially should be thoroughly cooked before being fed to children.

A mixed diet is the best one for man, as experience has proved and is proving every day. It is only necessary to look at the lips of a few children brought up to a large extent on a vegetable diet to be convinced. Neither is a diet of animal food alone to be recommended for a child, as it would throw a great strain on part of the system to use the albumins as fuel in place of the usual starch or sugar. The diet, besides containing animal food, cereals, vegetables, and fruit, should not be a monotonous one. It is well to change the cereals from time to time. A child who is not eating well at home will very often develop an enviable appetite at the house of a friend or relation.

Change of air and scene greatly improves the appetite. The state of the mind at the time of eating probably does not affect the digestion as much as it does in adults, in whom by anger or great mental excitement the process can practically be stopped, but it must have some influence. The meal should be as pleasant and happy as possible, and the child's training, except for table manners and what it should or should not eat, left for some other time. The meal should not be hurried. The food should be masticated well. A great many children grow up with a dietary very much limited. How often one sees a child who does not eat any potatoes or bread or oatmeal, and how difficult it is, when they get older and begin to visit, to pick out something that they are willing to eat. A child who is old enough and well enough to eat all kinds of plain food should be taught to do it. "There are children who acquire a dislike for meat and who persistently refuse it until they become anæmic and feeble, and there are others who refuse fresh vegetables, which they need. It is a great misfortune for a child to be indulged in such likes and dislikes. How often is the physician baffled in the treatment of a severe disease like typhoid fever, which requires a milk diet, by the patient insisting he has never been able to drink milk since childhood. If there is any taste which is natural to all men, it is that for milk, upon which all must live during infancy. . . . And there is no reason why children should not retain a normal fondness for it." (Thompson.)

In the appended list it can be seen that the proteids of animal food are in a general way more completely digested than those from vegetable food; that with the exception of peas, twenty-four per cent., beans, twenty-two per cent., and lentils, twenty-six per cent. (all dried), animal food contains more protein than vegetable; that fat is found mainly in animal food, slightly in cereals, and least of all in vegetables; that starch or sugar is absent from animal food except milk. To understand the list, take milk, for example. It means that in one hundred ounces 3.6 ounces are protein, all of which is digested; four ounces are butter fat, 3.8 ounces being digested, and 4.7 ounces are sugar, all of which is digested, the other 87.7 ounces being 0.7 ounces of salts and eighty-seven ounces of water.

BULLETIN 21. UNITED STATES DEPARTMENT OF AGRICULTURE.

TABLE 14.—*Estimates of Proportions of Digestible and Undigestible Nutrients in Food Materials.*

| FOOD MATERIALS (EDIBLE PORTION). | PROTEIN. | | | FATS. | | | CARBOHYDRATES. | | |
|---|---|---|---|---|---|---|---|---|---|
| | Digested. | Undigested. | Total. | Digested. | Undigested. | Total. | Digested. | Undigested. | Total. |
| Beef: | *P. ct.* | *P. ct.* | *P. ct.* | *P. ct.* | *P. ct.* | *P. ct.* | *P. ct.* | *P. ct.* | *P. ct.* |
| Shoulder | 19.5 | . . . . | 19.5 | 14.8 | 0.8 | 15.6 | . . . . | . . . . | . . . . |
| Sirloin | 18.5 | . . . . | 18.5 | 19.5 | 1 | 20.5 | . . . . | . . . . | . . . . |
| Round | 20.5 | . . . . | 20.5 | 9.6 | .5 | 10.1 | . . . . | . . . . | . . . . |
| Veal, shoulder | 20.2 | . . . . | 20.2 | 9.3 | .5 | 9.8 | . . . . | . . . . | . . . . |
| Mutton: | | | | | | | | | |
| Shoulder | 18.1 | . . . . | 18.1 | 21.3 | 1.1 | 22.4 | . . . . | . . . . | . . . . |
| Loin | 15 | . . . . | 15 | 33.3 | 1.7 | 35.0 | . . . . | . . . . | . . . . |
| Pork: | | | | | | | | | |
| Shoulder | 16 | . . . . | 16 | 31.2 | 1.6 | 32.8 | . . . . | . . . . | . . . . |
| Very fat | .9 | . . . . | .9 | 78.7 | 4.1 | 82.8 | . . . . | . . . . | . . . . |
| Eggs | 14.9 | . . . . | 14.9 | 10.3 | .2 | 10.5 | . . . . | . . . . | . . . . |
| Milk | 3.6 | . . . . | 3.6 | 3.8 | .2 | 1 | 4.8 | . . . . | 4.7 |
| Butter | (?) | (?) | 1 | 81.6 | 3.4 | 85 | .5 | . . . . | .5 |
| Cheese: | | | | | | | | | |
| Full cream | 28.3 | . . . . | 28.3 | 33.7 | 1.8 | 35.5 | 1.8 | . . . . | 1.8 |
| Skim milk | 38.4 | . . . . | 38.4 | 6.5 | .3 | 6.8 | 8.9 | . . . . | 8.9 |
| Haddock | 16.8 | . . . . | 16.8 | .3 | . . . . | .3 | . . . . | . . . . | . . . . |
| Bluefish | 19 | . . . . | 19 | 1.1 | .1 | 1.2 | . . . . | . . . . | . . . . |
| Cod | 15.8 | . . . . | 15.8 | .4 | . . . . | .4 | . . . . | . . . . | . . . . |
| Shad | 18.6 | . . . . | 18.6 | 9 | .5 | 9.5 | . . . . | . . . . | . . . . |
| Mackerel | 18.8 | . . . . | 18.8 | 7.8 | .4 | 8.2 | . . . . | . . . . | . . . . |
| Halibut | 18.3 | . . . . | 18.3 | 4.9 | .3 | 5.2 | . . . . | . . . . | . . . . |
| Salmon | 21.6 | . . . . | 21.6 | 12.7 | .7 | 13.4 | . . . . | . . . . | . . . . |
| Wheat flour: | | | | | | | | | |
| Fine | 9.4 | 1.6 | 11 | .9 | .2 | 1.1 | 71.1 | 3.8 | 74.9 |
| Medium | 9.5 | 2.2 | 11.7 | 1.4 | .3 | 1.7 | 68.1 | 3.6 | 71.7 |
| Cracked wheat | 8.9 | 3 | 11.9 | 1.4 | .3 | 1.7 | 70.9 | 3.7 | 74.6 |
| Maize meal | 7.8 | 1.4 | 9.2 | 3 | .8 | 3.8 | 67.1 | 3.5 | 70.6 |
| Rice | 6.3 | 1.1 | 7.4 | .3 | .1 | .4 | 75.4 | 4 | 79.4 |
| Potatoes | 1.6 | .5 | 2.1 | (?) | (?) | .1 | 17 | .9 | 17.9 |
| Turnips | 1 | .2 | 1.2 | (?) | (?) | .2 | 7.8 | .4 | 8.2 |
| Beets | 1.2 | .3 | 1.5 | (?) | (?) | .1 | 8.5 | .4 | 8.9 |
| Wheat bread | 7.1 | 1.7 | 8.8 | 1.4 | .3 | 1.7 | 53.4 | 2.8 | 56.2 |
| Rye bread | 6.5 | 1.9 | 8.4 | .4 | .1 | .5 | 56.7 | 3 | 59.7 |
| Graham bread | 7.1 | 2.4 | 9.5 | 1.1 | .3 | 1.4 | 50.6 | 2.7 | 53.3 |